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U.S. Department of the Interior • U.S. Geological Survey

# MINERAL INDUSTRY SURVEYS

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## MANUFACTURED ABRASIVES IN THE FOURTH QUARTER 1996

The U.S. Geological Survey (USGS) collects quarterly data on manufactured abrasives from producers through non-mandatory surveys. Manufactured abrasives included in this report are fused aluminum oxide, silicon carbide, and metallic abrasives. The USGS estimates unreported production.

### Fused Aluminum Oxide

Production data for the fourth quarter of 1996 were collected from five companies operating ten plants in the United States and Canada. Reported production of regular-grade fused aluminum oxide in the fourth quarter was 28,100 metric tons valued at \$9.9 million, or \$351 per ton. Production during the same period of 1995 was 30,700 tons valued at \$10.7 million, or about \$349 per ton. Output of high-purity fused aluminum oxide in the fourth quarter was 12,000 tons. Production during the same period of 1995 was 10,700 tons.

The output of regular-grade fused aluminum oxide in 1996 was approximately 127,000 tons valued at \$44.9 million; production in 1995 was 126,000 tons valued at \$45.1 million. Based on published production data, total 1996 output of high-purity fused aluminum oxide was projected to be about 40,000 tons; annual production reached 33,100 tons in 1995.

According to the Bureau of the Census, imports of crude fused aluminum oxide through November 1996 were 64,500 tons valued at \$30.4 million, or \$472 per ton. Of the reported imports, 98% were from Canada. Imports of refined and ground fused aluminum oxide during the same time period were 47,500 tons valued at \$34.9 million, or \$734 per ton. The top four countries exporting the largest quantities of refined and ground material to the United States, in descending order, were China (58%), Canada (18%), Austria (11%), and Germany (6%).

Exports of fused aluminum oxide through November 1996

were 11,100 tons. The exports were valued at \$17 million, or \$1,541 per ton.

As of October 1, 1996, the National Defense Stockpile (NDS), contained 169,000 tons of crude fused aluminum oxide valued at \$33.5 million and 30,200 tons of fused aluminum oxide abrasive grain valued at \$15.8 million. However, the NDS goals for crude fused aluminum oxide and fused aluminum oxide abrasive grain are zero; all of the material is authorized by law for disposal.

During the fourth quarter of 1996, the Department of Defense sold 27,200 tons of crude fused aluminum oxide and 925 tons of fused aluminum oxide abrasive grain. The Department of Defense may sell more abrasive grain throughout 1997, but it does not plan to sell additional crude fused aluminum oxide until late in the year.

### Silicon Carbide

The USGS collects silicon carbide production data from three companies operating three plants in the United States and Canada. However, the data have been withheld from this report in order to protect company proprietary information.

Imports of crude silicon carbide through November 1996 were 147,000 tons valued at \$62.1 million. Imports from China were 111,000 tons valued at \$39.7 million. The average price of imported crude silicon carbide, excluding Chinese crude, was \$620 per ton. The average price of Chinese crude was \$358 per ton. Imports of refined and ground silicon carbide for the same period were 14,000 tons valued at \$22.4 million, or \$1,610 per ton. During the period, China and Canada were the largest suppliers of crude material, furnishing virtually all of the tonnage with shares of 75% and 19%, respectively. In descending order, Brazil (49%), Norway (20%), and Venezuela

(11%) were the largest suppliers of refined and ground silicon carbide.

Exports of crude silicon carbide through November 1996 were 493 tons valued at \$1.4 million. Exports of refined and ground silicon carbide for the period were 12,700 tons valued at \$13.5 million.

As of October 1, 1996, the National Defense Stockpile contained 20,800 tons of silicon carbide valued at \$10.3 million; however, the stockpile goal is zero. Existing legislation authorizes disposal of all of the silicon carbide in the stockpile. During the fourth quarter of 1996, the Department of Defense sold 4,080 tons of silicon carbide from the stockpile. The Department of Defense does not plan to sell additional silicon carbide until late 1997.

### **Metallic Abrasives**

Metallic abrasives information was collected from thirteen companies operating fourteen U.S. plants -- seven producing cut wire shot and seven producing steel shot and grit. During the fourth quarter of 1996, U.S. production of steel shot and grit was 58,100 tons, a 1% increase compared to the same period in 1995. Fourth quarter production was valued at \$25.5 million or about \$439 per ton. Total 1996 output was about 240,000 tons valued at \$106 million; production in 1995 reached 234,000 tons valued at \$102 million.

Shipments of steel shot and grit in the fourth quarter were 53,500 tons valued at \$24.3 million, or \$455 per ton. Shipments during the fourth quarter of 1995 were 51,800 tons valued at \$23.4 million or \$455 per ton.

Fourth quarter production of other types of metallic shot and grit (annealed shot and grit, cut wire, and reclaimed shot and grit) were 2,000 tons valued at \$4.0 million. Shipments were essentially the same as the production quantity and value.

Imports of all types of metallic shot and grit through November 1996 were 18,400 tons valued at \$11.2 million, or \$609 per ton. Canada was the largest supplier accounting for 82% of the tonnage imported.

Exports of all types of metallic abrasive through November 1996 were 23,100 tons valued at \$14 million, or \$606 per ton. Exports for 1995 were 30,800 tons valued at \$16.1 million, or \$523 per ton.

If you have suggestions about how we can improve this report, please call (703) 648-7721.
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TABLE 1  
MANUFACTURED ABRASIVES 1/

(Metric tons unless otherwise specified)

Source and product	1995		1996							
	Fourth quarter		First quarter		Second quarter		Third quarter		Fourth quarter	
	Value		Value		Value		Value		Value	
	Quantity	(thousands)	Quantity	(thousands)	Quantity	(thousands)	Quantity	(thousands)	Quantity	(thousands)
United States and Canada: Production										
Crude aluminum oxide:										
Regular: Abrasive and refractories	30,700	\$10,700	33,200	\$12,100	33,700	\$11,800	31,800	\$11,200	28,100	\$9,860
High purity	10,700	W	W	W	7,440	4,130	10,800	6,100	12,000	6,820
Total	41,400	10,700	33,200	12,100	41,200	15,900	42,600	17,300	40,100	16,700
United States: Production										
Steel shot and grit	57,600	24,500	63,900	28,100	62,900	28,100	54,900	24,200	58,100	25,500
Other shot and grit 2/	1,720 e/	3,380 e/	2,070 e/	3,020 e/	1,880 e/	3,680 e/	2,110 e/	4,120 e/	2,000 e/	3,960 e/
Total	59,300	27,900	66,000	31,200	64,800	31,800	57,000	28,300	60,100	29,400
United States: Shipments										
Steel shot and grit	51,800	23,400	54,400	24,800	54,900	25,400	54,900	25,200	53,500	24,300
Other shot and grit 2/	2,210 e/	8,100 e/	2,630 e/	9,350 e/	1,880 e/	3,700 e/	2,120 e/	4,130 e/	2,000 e/	3,960 e/
Total	54,000	31,500	57,000	34,100	56,800	29,100	57,100	29,300	55,500	28,300

e/ Estimated. W Withheld to avoid disclosing company proprietary data.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes cut wire shot and reclaimed shot and grit from primary producers.